**Ch. 9 In class Review NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. We want to look at the percent of men who are colorblind. We take a random sample and find that there are 330 out of 1150 males are colorblind. The National Association of Medical Professionals claimed in a 2008 article that only 25% of all men are colorblind.
   1. Check the 3 conditions.
   2. Is there evidence at the 0.05 level of significance to say that the % has changed (is not equal to 25%)?
   3. Create and interpret a 98% confidence interval for the true percent. (Z\* = 2.326)
2. I perform a test of significance and I calculate a P-value of 0.06. Is this significant at the 1% level? How about the5% level? How about the 10% level?
3. I have a 92% confidence interval that is (0.22, 0.26). Which of the following could be the 94% confidence interval?
   1. (0.20, 0.24) b. (0.20, 0.28) c. (0.23, 0.25) d. (0.23, 0.27)
4. I have a 92% confidence interval that is (0.22, 0.26). Which of the following could be the 90% confidence interval?
   1. (0.20, 0.24) b. (0.20, 0.28) c. (0.23, 0.25) d. (0.23, 0.27)
5. I have an interval that is (0.30, 0.39)
   1. What is my sample proportion ()?
   2. What is my margin of error?
6. I want to sample HS seniors to see what percent of them plan to attend the senior prom. I want to have a 6% margin of error, and want to be 99% confident (Z\* = 2.576). What sample size should I take? Last year’s result was 86%.
7. Nationwide, it is estimated that 40% of gas stations have tanks that leak to some extent. A new program in California is designed to lessen the prevalence of these leaks. We want to assess the effectiveness of this program and take a random sample of 45 stations and find that 15 of them have leaks.
   1. Check the 3 conditions.
   2. Create a 94% confidence interval for the percent of stations that leak. Interpret your interval. (Z\* = 1.881)
   3. **Using this interval**, do you think that the percent of stations with leaks has decreased? Why or why not?
   4. Explain what 94% confidence means in this **context**.
   5. If I decrease my confidence to 90%, what will happen to:
      1. the critical value
      2. the margin of error
      3. the confidence interval?
   6. If I decrease my sample size to 30, what will happen to:
      1. the critical value
      2. the margin of error
      3. the confidence interval?
8. I want to create a 96% confidence interval with a 2.5% margin of error. What sample size should I take? (Z\* = 2.054)
9. Many doctors believe that teenagers do not get enough Vitamin C. Previous studies have indicated that up to 42% of teenagers are Vitamin C deficient. PA decides to implement a program to educate students about getting Vitamin C, in hopes of decreasing the % of teenagers who are deficient. After a year, researchers take a random sample of 200 total HS students. They find that only 76 of them are Vitamin C deficient.
   1. Check the 3 conditions.
   2. Is there sufficient evidence at the 5% significance level that the campaign worked (and the % decreased)? Perform a full test of significance.
10. What are the 4 steps you need to do when completing a confidence interval?
11. What are the 5 steps you need to do when completing a test of significance?
12. What is inference?
13. What is inference based on?

BONUS:

1. What is the Z\* for a 91% confidence interval? Show work!
2. I have an interval that is (0.40, 0.48)
   1. What is my sample proportion ()? What is my margin of error?
   2. If my sample size is 200, what is my level of confidence? (show work!)